

WHAT IS CLAIMED IS:

1. A multi-beam scanning optical system,
comprising:

5 a light source having at least three light-
emitting points;

deflection means for deflecting at least three
light fluxes emitted from the at least three light-
emitting points to a surface to be scanned; and

10 scanning optical means for guiding the at least
three light fluxes which are deflected and reflected
on the deflection means onto the surface to be
scanned, each of the at least three light fluxes
being entered into the surface to be scanned at an
angle within a sub-scanning section,

15 wherein, provided that a variation in lengths
of scanning lines which is caused when each of the at
least three light fluxes is entered into the surface
to be scanned at an angle within the sub-scanning
section is represented as $\Delta Y1$, a variation in lengths
20 of scanning lines which is caused when each of the at
least three light fluxes is allowed to enter as a
non-parallel light flux to a deflection surface of
the deflection means within a main-scanning section
is represented as $\Delta Y2$, and a variation in lengths of
25 scanning lines which is caused from a difference of
wavelength between at least two of the at least three
light fluxes is represented as $\Delta Y3$,

values of ΔY_1 , ΔY_2 , and ΔY_3 are set so as to satisfy

$$|\Delta Y_1 + \Delta Y_2 + \Delta Y_3| < |\Delta Y_1|.$$

5 2. A multi-beam scanning optical system
according to claim 1, wherein in the case where an
optical path length of a light flux from a light-
emitting point nearest an optical axis of the
scanning optical means to the surface to be scanned
10 is longer than optical paths of light fluxes from
other light-emitting points to the surface to be
scanned, the light fluxes which are deflected and
reflected on the deflection means are converted into
convergent light fluxes, and in the case where the
15 optical path length of the light flux from the light-
emitting point nearest the optical axis of the
scanning optical means to the surface to be scanned
is shorter than the optical paths of the light fluxes
from the other light-emitting points to the surface
20 to be scanned, the light fluxes which are deflected
and reflected on the deflection means are converted
into divergent light fluxes.

 3. A multi-beam scanning optical system
25 according to claim 1, wherein the light source
comprises a plurality of light source units,
at least one of the plurality of light source

units includes a plurality of light-emitting points,
a variation in lengths of scanning lines on the
surface to be scanned, which are formed by light
fluxes from light-emitting points in the plurality of
5 light source units is reduced by converting the light
fluxes which are deflected and reflected on the
deflection means into non-parallel light fluxes
within the main-scanning section, and

a variation in lengths of scanning lines on the
10 surface to be scanned, which are formed by light
fluxes from the plurality of light-emitting points in
the at least one light source unit is reduced by
making a difference of wavelength between the light
fluxes from the light-emitting points.

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4. A multi-beam scanning optical system
according to claim 1, wherein the light source
comprises a plurality of light source units,

at least one of the plurality of light source
20 units includes a plurality of light-emitting points,
a variation in lengths of scanning lines on the
surface to be scanned, which are formed by light
fluxes from light-emitting points in the plurality of
light source units is reduced by making a difference
25 of wavelength between the light fluxes from the
light-emitting points in the light source units, and
a variation in lengths of scanning lines on the

surface to be scanned, which are formed by light
fluxes from the plurality of light-emitting points in
the at least one light source unit is reduced by
converting the plurality of light fluxes which are
5 deflected and reflected on the deflection means into
non-parallel light fluxes within the main-scanning
section.

5. A multi-beam scanning optical system
10 according to claim 1, wherein the at least three
light fluxes are entered into the deflection surface
of the deflection means at irregular angles within
the main-scanning section.

15 6. An image forming apparatus, comprising:
the multi-beam scanning optical system
according to any one of claims 1 to 5;
a photosensitive member which is located on the
surface to be scanned;
20 a developing unit that develops, as a toner
image, an electrostatic latent image which is formed
on the photosensitive member scanned with the light
fluxes by the multi-beam scanning optical system;
a transferring unit that transfers the
25 developed toner image to a transfer material; and
a fixing device that fixes the transferred
toner image to the transfer material.

7. An image forming apparatus, comprising:
the multi-beam scanning optical system
according to claim 6; and

a printer controller that converts code data
5 inputted from an external device into an image signal
and outputs the image signal to the multi-beam
scanning optical system.

8. A color image forming apparatus, comprising:
10 a plurality of multi-beam scanning optical
systems, each of which is the multi-beam scanning
optical system according to any one of claims 1 to 5;
and

a plurality of image bearing members each
15 located on a surface to be scanned of the multi-beam
scanning optical systems, which form images of
different colors.

9. A color image forming apparatus according to
20 claim 8, further comprising a printer controller that
converts a color signal inputted from an external
device into image data of different colors and
outputs the image data to the respective multi-beam
scanning optical systems.